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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,538	01/27/2004	Kazunari Oyama	02910.000110.	9614

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FITZPATRICK CELLA HARPER & SCINTO  
30 ROCKEFELLER PLAZA  
NEW YORK, NY 10112

EXAMINER
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CHANG, KENT WU

ART UNIT	PAPER NUMBER
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2629

MAIL DATE	DELIVERY MODE
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08/14/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/764,538	Applicant(s) OYAMA ET AL.	
	Examiner Kent Chang	Art Unit 2629	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 June 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 5,6,10-18 and 20-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5,6,10-18 and 20-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 5, 6, 10-18 and 20-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura et al (US2002/0031972) or Dean et al (US Patent No. 6,645,028).

Kitamura teaches a method of driving and the manufacturing method of an electron-emitting devices formed on a substrate, in each of which an electron-emitting member including a plurality of carbon fibers is capable of emitting electrons when a driving voltage is applied between a cathode electrode on which the electron-emitting member is formed and a counter electrode disposed in opposition to the cathode electrode. Dean teaches a method of driving and the manufacturing method of an electron-emitting devices formed on a substrate, in each of which an electron-emitting member including a plurality of carbon fibers is capable of emitting electrons when a driving voltage is applied between a cathode electrode on which the electron-emitting member is formed and a counter electrode disposed in opposition to the cathode electrode. Both devices of Kitamura and Dean include a voltage operating range having a maximum applied voltage level and a minimum applied voltage level within which the display device can be driven (such as the highest and lowest applied voltage as shown in Figures 13 and 14 in the reference of Kitamura, or the highest and lowest applied voltage as shown in Figure 1 in the reference of Dean). It would have been obvious for one ordinary skill in the art at the time of the invention to use any voltage having a level within the operating range including the maximum applied voltage to drive the display since any voltage within that range performs equally well in generating an image. It would also have been obvious for one ordinary skill in the art at the time of the invention

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to test the device with the maximum applied voltage and minimum applied voltage such as during manufacturing time or any time the user wants to examine the functionality of the device. In other words, during the very first time of testing when the applied voltage is increased to the maximum value, the following limitations

- the second voltage level which is applied to a cathode electrode for shifting a bending point of an F-N plot is higher than the maximum applied voltage the cathode electrode has experienced (i.e., that is, the second voltage level is not within a voltage range within which the cathode electrode has been previously operated); and

are met since the maximum applied voltage is higher than any previous applied voltage.

In addition, the following limitations

- increasing of an applying voltage from the first voltage level to the second voltage level causes the shifting of the bending point of the F-N plot from a point corresponding to the first voltage level to a point corresponding to the second voltage level.

are also met because of the inherent property of a FED, as admitted by applicant in the specification.

In other words, it would have been obvious for one ordinary skill in the art at the time of the invention to apply a voltage across a voltage level above which an absolute value of an inclination in F-N plots of an electron-emitting characteristic of the electron-emitting member decreases, shifting the F-N plot of the electron-emitting characteristic of the first electron-emitting member as a result of increasing the applying voltage that is applied between the counter electrode and the first cathode electrode having the first electron-emitting member in the cathode electrodes, across the voltage above which the

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absolute value of the inclination in the F-N plot of the electron-emitting characteristic of the first electron-emitting member decreases; and therefore would reduce a difference of (i) an electron-emitting characteristic of a second electron-emitting member being operative to emit a relatively greater number of electrons when a predetermined voltage is applied between a second cathode electrode having the second electron-emitting member in the cathode electrodes and the counter electrode and (ii) the electron-emitting characteristic of the first electron-emitting member being operative to emit a relative lesser number of electrons when the predetermined voltage is applied between the first cathode electrode and the counter electrode since such a voltage level is within the operating range and applying the maximum voltage would cause the reduction of the difference as stated above. The fact that a high voltage (a voltage is less than or equal to the maximum applied voltage) would cause the shifting of the F-N plot and the reduction of the difference as stated above is the inherent property of a FED, as admitted by applicant in the specification.

Furthermore, the electron-emitting device of Kitamura includes a plurality of carbon fibers selected from among a plurality of carbon nanotubes, a plurality of graphite nanofibers and a mixed plurality of carbon nanotubes and graphite nanofibers (Paragraph 0041) and the electron-emitting device of Dean includes a plurality of carbon fibers selected from among a plurality of carbon nanotubes, a plurality of graphite nanofibers and a mixed plurality of carbon nanotubes and graphite nanofibers (see column 2 lines 15-22).

***Response to Arguments***

5. Applicant's arguments filed 6/14/07 have been fully considered but they are not persuasive.

Applicant mainly argues that the references does not teach the following limitations:

- the second voltage level which is applied to a cathode electrode for shifting a bending point of an F-N plot is higher than the maximum applied voltage the cathode electrode has experienced (i.e., that is, the second voltage level is not within a voltage range within which the cathode electrode has been previously operated); and
- increasing of an applying voltage from the first voltage level to the second voltage level causes the shifting of the bending point of the F-N plot from a point corresponding to the first voltage level to a point corresponding to the second voltage level.

In response, the examiner points out that during the very first time of testing when the applied voltage is increased to the maximum value, the following limitations

- the second voltage level which is applied to a cathode electrode for shifting a bending point of an F-N plot is higher than the maximum applied voltage the cathode electrode has experienced (i.e., that is, the second voltage level is not within a voltage range within which the cathode electrode has been previously operated); and

are met since the maximum applied voltage is higher than any previous applied voltage.

In addition, the following limitations

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- increasing of an applying voltage from the first voltage level to the second voltage level causes the shifting of the bending point of the F-N plot from a point corresponding to the first voltage level to a point corresponding to the second voltage level.

are also met because of the inherent property of a FED, as admitted by applicant in the specification.

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

### **CONTACT INFORMATION**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kent Chang whose telephone number is 571-272-7667.



The examiner can normally be reached on Monday to Thursday from 9:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz, can be reached at 571-272-3638.

**Any response to this action should be mailed to:**


Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:**

**571-273-8300**

Hand-delivered responses should be brought to the Customer Service Window, now located at the Randolph Building, 401 Dulany Street, Alexandria, VA 22314.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Kent Chang  
Primary Examiner  
Art Unit 2629